



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/630,510

07/29/2003

Senthil Govindaswamy

000172

7894

23696 7590 12/24/2008  
QUALCOMM INCORPORATED  
5775 MOREHOUSE DR.  
SAN DIEGO, CA 92121

EXAMINER

DANG, DUY M

ART UNIT

PAPER NUMBER

2624

NOTIFICATION DATE

DELIVERY MODE

12/24/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com  
kascanla@qualcomm.com  
nanm@qualcomm.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/630,510	<b>Applicant(s)</b> GOVINDASWAMY ET AL.	
	<b>Examiner</b> Duy M. Dang	<b>Art Unit</b> 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9/16/08.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 13-24,27 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12,25,26,28,29 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. Applicant's response filed on September 16, 2008 has been entered and made of record.

***Election/Restrictions***

2. Applicant is advised to cancel all non-elected claims 13-24, 27, and 30 in response to this Office action

***Response to Arguments***

3. Applicant's arguments filed 3/28/08 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claim 1 as a representation claim have been considered but are moot in view of the new ground(s) of rejection. As specifically pointed by applicant at page 2 of the response, for example, item 90 shown in figure 4 of Watson does disclose determining when bit rate is equal to desired bit rate according to column 11 lines 27-28. The examine also acknowledged that in the phone interview on 8/14/2008.

***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 25-26 and 28-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

In this case, claim 25 as a representative claim, is an apparatus type claim. The scope of the claim as properly read in light of the specification is directed to software or computer program, not a traditional "apparatus" type claim. The claimed "means for outputting..." and "means for compressing..." are defined as "software" according to applicant's disclosed

specification page 2 paragraph [0008] and page 8 paragraph [0036]. Computer program or software may be statutory if it is stored on a computer-readable medium and such medium is not positive recited in this instant claim. Therefore, claim 27 fails to meet the requirement as set forth in 25 U.S.C 101. See MPEP 2106 and 2106.01. Likewise, claims 26 and 28-29 are also rejected for the same reasons as well.

***Claim Rejections - 35 USC § 103***

6. The text of those sections of Title 35, U.S. Code 103 not included in this action can be found in a prior Office action.

7. Claims 1-10, 12, 25-26, 28-29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Watson (USPN 5,629,780. Art of record, IDS filed on 7/9/04, referred as Watson hereinafter) in view of Pian et al. (US Publication No. 2002/0021754 A1, referred as Pian hereinafter).

Regarding claim 1, Watson teaches an apparatus (see figure 2) comprising: a source generator configured to convert image information into digital image information (see item 30 of figure 2 and column 5 lines 18-22); and an encoder coupled to the source generator (see item 12 of figure 2 functions as the so-called “encoder”), the encoder configured to receive the digital image information from the source generator (see figure 2: note encoder denoted at 12 receives digital image information source 30) and comprising: a parameter generator to output a final set of parameters (i.e., quantizer 38 of figure 2 corresponds to the so-called “parameter generator”; also the “quantization matrix optimizer” depicted at 36 of figure 2 refers to the so called “parameter generator”; and the “optimized quantization matrix” outputted from optimizer 36 and inputted to quantizer 38 corresponds to the so-called “final set of parameters”), wherein the final

Art Unit: 2624

set of parameters is determined to result in a compressed data bit rate below a threshold so that a decoder will not stop during a playback (see item 90 of figure 4. Note that when bit rate is equal desired bit rate (YES), compressor 12 transmits compressed data to receiver 14 so that receiver will decode compressed data. Otherwise, there is no compressed data received at the receiver 14 and therefore there is no decoding processing that means decoder or receiver 14 will stop decoding); an image compressor (see items depicted at 34, 38, and 40 of figure 2) coupled to the parameter generator, the image compressor to compress the digital image information using the final set of parameters, wherein the encoder outputs the compressed digital information (compressor 12 entropy codes (item 40 of figure 2) image 30 using parameters from quantizer 38).

Watson does not teach that compressed data bit rate is less than or below a selected threshold. However, Pian teaches determining when compressed data bit rate is less than or below a selected threshold (see comparator 30 of figure 3, representation in figure 4 and paragraphs [0043-0047])

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate such claimed features as taught by Pian in combination with Watson in order to prevent data overflow.

Regarding claim 2, Watson further teaches wherein the parameter generator comprises: a second image compressor to compress the digital information using a first set of parameters (see item 56 of figure 3 refers to claimed “second image compressor” and “initial matrix” disclosed in optimizer 36 refers to claimed “first set of parameters”); and a processor coupled to the second image compressors (see 90 of figure 4 and column 10 lines 55-67), the processor to output the

Art Unit: 2624

second set of parameters, the processor to adjust the second set of parameters (see 92 of figure 4; also the output of the matrix 66 of figure 3 refers to the so called "second set of parameters") and output a third set of parameters as the second set of parameters (i.e. output of matrix 66), if the use of the second set of parameters results in a selected data bit rate, and otherwise, to output the second set of parameters as the first set of parameters (see 90 of figure 4: when "NO" is presented, process is repeated).

Regarding claims 3 and 5, Watson further teaches wherein the parameter generator further comprises: a statistic generator (see item 62 of figure 3) coupled to the processor, the statistic generator configured to generate a statistical analysis (pooled error depicted at 64 of figure 3); and wherein the processor adjusts the first set of parameters based on the statistical analysis (see 64 of figure 3).

Regarding claims 4 and 31, Watson further teaches wherein the parameter generator comprises: a processor (see 90 of figure 4) to output a first set of parameters, the processor to adjust the first set of parameters to generate a second set of parameters if the use of the first set of parameters results in a selected data bit rate, and to output the first set of parameters as the final set of parameters (see figure 3).

Regarding claim 6, Watson further teaches wherein the statistical analysis involves analyzing bits per pixel for images (see column 12, lines 43-45).

Regarding claim 7, Watson further teaches wherein the statistical analysis determines the effectiveness of the first set of parameters (see column 9 lines 46-50).

Regarding claim 8, Watson further teaches wherein the final set of parameters includes Q-steps (see 35 of figure 3) and the first image compressor comprises: a transform module to

Art Unit: 2624

convert the digital image information from spatial to frequency domain, the transform module to generate transform coefficients (see 34 of figure 2: DCT); a quantization module to quantize the transform coefficients using the Q-steps (see 38 of figure 2 and 56 of figure 3); and a variable length coding module to compress the quantized transform coefficients (see entropy code depicted at 40 of figure 2).

Regarding claim 9, Watson fails to further teaches wherein the final set of parameters further includes frequency weight mask (FWM) tables and the quantization module to quantize the transform coefficients using FWM tables and Q-steps.

Pian teaches parameters including frequency weight mask tables (see paragraphs [0034] to [0036]) and quantizing transform coefficients using FWM tables (see paragraph [0037]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Pian's FWM into Watson's matrices (see items 35 and 66 of figure 3 and 84 of figure 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency weight mask tables into the first set of parameters and quantize the transform coefficients using FWM tables and Q-steps, as specified in claim 9, in order to better control the encoded data rate in video compression (see Pian, paragraph [0011]).

Regarding claim 10, Watson further teaches wherein the first set of parameters further includes a Huffman code tables (see column 5 lines 25-29) and the variable length coding module includes a Huffman engine to compress the quantized transform coefficients using the Huffman code tables (see column 5 lines 25-29).

Regarding claim 12, Watson fails to teach wherein the digital image information is at least a portion of a film. However, Watson does teach image as a digital file containing pixel data (see column 5 line 21), television systems, and “original image 30 is received from a scanner” (see col. 5 lines 17-19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a portion of a film in Watson’s image.

The motivation/suggestion for doing so would have been because film has been an industry standard image recording medium and is compatible with Watson’s invention.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use at least a portion of a film as digital image information to obtain the invention as specified in claim 12.

Regarding claims 25 and 28, Watson teaches an apparatus for encoding digital image information (the representation of figure 2 refers to “an apparatus for encoding digital image information”) see comprising: means for outputting at least a first set of parameters (see “optimized quantization matrix” inputted to quantizer 38 of figure 2. This refers to the so called “first set of parameters”); and first means for compressing the digital image information using the first set of parameters (see quantizer 38 and entropy code 40 included in coder/compressor 12 of figure 2).

Regarding claims 26 and 29, these claims are also rejected for the same reasons as applied to claim 2 above.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watson and Pian as applied to claims 1-10, 12, 25-26, 28-29, and 31 above, in view of Lee et al. (USPN 5,576,767. Art of recorded, IDS filed on 7/9/04, referred as Lee hereinafter).



Regarding claim 11, both Watson and Pian fails to teach wherein the final set of parameters further includes an adaptive block size discrete transform (ABSDCT) threshold and the transform module comprises an ABSDCT module to convert the digital image information from spatial to frequency domain using ABSDCT according to the ABSDCT threshold.

Lee teaches ABSDCT as a replacement for DCT (see column 7 lines 37-38 and column 4 lines 20-27), parameters including an ABSDCT threshold (cost function mentioned at column 7 line 60), and converting digital information from spatial to frequency domain using ABSDCT according to the ABSDCT threshold (see figures 6-7).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate Lee's teachings into Watson. The motivation/suggestion for doing so would have been to provide an improved method for compressing image data for transmission and for reconstruction of the image data upon reception by encoding high precision reproduction of pixel data at a minimum transmission data rate (see column 2 lines 33-40 of Lee).

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chiu et al. (USPN 6,366,705) teaches generating low bit rate by adjusting quantization parameters as set forth at figures 5A-5C.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy M. Dang whose telephone number is 571-272-7389. The examiner can normally be reached on Monday to Friday from 6:00AM to 2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

dmd  
12/08

/Duy M Dang/  
Primary Examiner, Art Unit 2624